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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,797	08/26/2003	Osamu Machida	03280087AA	2015

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EXAMINER	
MRUK, GEOFFREY S	

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/647,797	MACHIDA ET AL.	
	Examiner	Art Unit	
	Geoffrey Mruk	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *2,6-9 and 11-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-5, 10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20 November 2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 6-9 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 17 May 2003. The Examiner also notes applicant elects Species 1 shown in Figures 4 and 5. The claims readable on the elected species include claims 1, 3-5 and 10.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohta et al. (US 5,818,482).

With respect to claim 1, Ohta discloses an inkjet recording head (Fig. 1-3) comprising:

- a chamber plate (Fig. 3, element 13) formed with a plurality of pressure chambers (Fig. 3, element 17) filled with ink, the pressure chambers being aligned in a row that extends in a first direction (The Examiner notes the first direction to be parallel to line III-III in Fig. 1);

- a diaphragm (Fig. 3, element 12) adhered to the chamber plate (Column 5, lines 37-61);
- a housing (Fig. 3, element 1) having a first surface (Fig. 3, element 5) and a second surface (Fig. 3, element 3) opposing the first surface,
- the first surface being adhered to the diaphragm (Fig. 3, element 18), the first surface being formed with a plurality of first grooves (Fig. 2, element 5b) that extend in a second direction (The Examiner notes the second direction to be parallel to line IV-IV in Fig. 1) perpendicular to the first direction, the first grooves confronting the pressure chambers with the diaphragm interposed between the first grooves and the pressure chambers,
- the second surface being formed with a second groove (Area between elements 7 and 8 in Fig. 2 and 3) that extends in the first direction, the first grooves intersecting the second groove at positions that confront the pressure chambers (Column 5, lines 25-36, i.e. actuatable piezoelectric element), wherein
- a plurality of through holes (Fig. 2, array of element 5a) that extend from the first surface through to the second surface of the housing are formed where the first grooves intersect the second groove; and
- a plurality of actuators (Fig. 4, array of element 7) housed in the through holes, one end of each actuator being adhered to the diaphragm (Fig 4, array of element 18).

With respect to claim 5, Ohta discloses the plurality of inkjet recording heads being aligned in a row (Fig. 2, elements La, Lb; i.e. array of inkjet recording heads).

With respect to claim 10, Ohta discloses an inkjet recording head (Fig. 1-3) comprising:

- a chamber plate (Fig. 3, element 13) formed with a plurality of pressure (Fig. 3, element 17) chambers filled with ink, the pressure chambers being aligned in a row that extends in a lengthwise direction (The Examiner notes the first direction to be parallel to line III-III in Fig. 1);
- a diaphragm (Fig. 3, element 12) adhered to the chamber plate (Column 5, lines 37-61);
- a housing (Fig. 3, element 1) having a first surface (Fig. 3, element 5) adhered to the diaphragm (Fig. 3, element 18), the housing being formed with a plurality of through holes (Fig. 2, array of element 5a) at positions corresponding to the pressure chambers (Column 5, lines 25-36, i.e. actuatable piezoelectric element) with the diaphragm interposed between the through holes and the pressure chambers; and
- a plurality of actuators (Fig. 4, array of element 7) disposed in the through holes, one end of each actuator being adhered to the diaphragm (Fig. 4, array of element 18).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3 and 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta et al. (US 5,818,482) in view of Ito et al. (US 6,070,310).

With respect to claims 3 and 4, Ohta discloses first grooves of the housing are formed using "a suitable cutting machine" (Column 21, lines 1-17).

However, Ohta fails to disclose the groove forming machine, which was a dicer or a wire saw.

Ito discloses "A dicing process using the diamond blade 17 is applied to the actuator board 2 to form one lateral groove 15A on the back end surface 2B and one lateral groove 15B on the bottom surface 2C. Thereafter, the dicing process is repeated plural times by parallel moving the diamond blade 17 in the width direction of the actuator board 2 to form a plurality of lateral grooves 15A arranged parallel to each other and a plurality of lateral grooves 15B arranged parallel to each other" and "another process to make the lateral grooves 15A and 15B and the longitudinal groove 16, as shown in FIG. 4(b), a YAG laser beam 19 which is emitted from a YAG (yttrium-aluminum-garnet) laser oscillator and focused by a f·θ lens 18 may be used. In this case, the YAG laser beam 19 is scanned onto the back end surface 2B and the bottom

surface 2C to form one lateral groove 15A and one lateral groove 15B respectively (Fig. 4a and 4b; Column 7, lines 19-49).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to combine the teachings of Ito in the ink jet printing head of Ohta. The motivation for doing so would have been for a "grooving process is applied to an actuator board 2 plural times to make grooves extending entirely in the front and rear direction of the actuator board 2 so that concave grooves 4 and a piezoelectric walls 3 appear alternately and parallel to each other" (Column 8, lines 55-59).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is (571) 272-2810. The examiner can normally be reached on 7am - 330pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GSM
5/25/2005

GM

5/31/05
MANISH S. SHAH
PRIMARY EXAMINER